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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,321	05/30/2001	Volker Lehmann	32226.4	7637

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EXAMINER
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GORDON, BRIAN R

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/870,321

Applicant(s)

LEHMANN, VOLKER

Examiner

Brian R. Gordon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3-18-05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-8 and 11-14 have been considered but are not persuasive.

The limitation relating to the rule or governing equation of the critical pressure was previously indicated as allowable subject matter. After further review, the examiner has determined such a recitation is not novel nor reason enough for indicating the instant claims allowable over the prior art. The rule or governing equation is well-known in the art as the Laplace equation of capillarity (as evidenced by the documents provided). The equation is the basis of describing, characterizing, and explaining the phenomena of capillary penetration or spreading of liquids on surfaces or in or through conduits. The critical pressure is an inherent pressure that is present with fluids that must be overcome for any type of fluid movement to occur during an aspiration process.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 6, and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1 and 6, the claims are written in a confusing language in which it is difficult to interpret the actual limitations of the inventions. The method steps of claim 1 are not given in a clear and precise order for one to clearly perform the intended method claimed. The controlling steps recites "less than a critical pressure". Less than a critical pressure of what? Less than a critical pressure of the first medium or the second medium? What does applicant consider a critical pressure? It appears as if the term is meant to define a pressure required to overcome the surface tension of a particular fluid in order for that fluid to be aspirated/taken up. Applicant should clearly define the term and specify the critical pressure of what within the claim. From applicant's remarks previously filed, July 30, 2004, that the invention is a method for aspirating a first fluid at a reduced pressure strong enough to allow a first fluid to enter a capillary but the reduced pressure is too weak to overcome the surface tension/critical pressure of a second fluid present. The controlling step does not specify what the reduced pressure is less than. Furthermore, the last step of exerting is confusing. The controlling step already specifies a reduced pressure is controlled and exerted. Is the exerting step meant to establish that the same reduced pressure is maintained or continuously exerted within the capillary rather than at the end after first fluid has been taken up? The exerting step further recites "wherein the reduced pressure is less than **the critical pressure** such that a surface tension produced by the first medium, or by a second medium in the capillary device when the first medium has been taken up fully by the capillary device, would be overcome so that the second medium which is present in a second phase which is different from the first phase, would be taken up into the capillary

device.” This clause also references the critical pressure. However applicant does not specify the critical pressure of what? It appears as if applicant is attempting to specify the reduce pressure is less than the pressure required to overcome the surface tension (critical pressure) of a second fluid in order for the second fluid to be aspirated; wherein the second fluid is in a different phase from the first fluid and exertion of such a reduce pressure allows for the first fluid to be taken up fully into the capillary while preventing the second fluid from being taken up in the capillary. The claim as drafted does not clearly express the idea of taking up a first fluid while preventing a second fluid from being taken up. The exerting step as presently drafted appears to state the reduce pressure is less than the surface tension produced by the first medium. How can that be such? If the pressure exerted is less than surface tension of the first fluid, the fluid referenced in the “taking” step would not be taken up nor remain in the capillary. The exerting step further references overcoming something in reference to the second medium being taken up. This is confusing for as recited by applicant the object of the invention is not to take up the second medium. Therefore the critical pressure of the second medium is not overcome.

It is suggested that method claim be amended to clearly state each individual step involved in performing the method to derive at applicant's intended result.

The claim is confusing, for applicant uses a number of descriptive phrases with the text making it unclear to the reader to assert what the phrases are directed to.

As to claim 6 which recites “it is less than a critical reduce pressure” it is unclear what the terms “it” in line of claim 6 is referencing.

What is the difference between a critical pressure and a critical reduce pressure?  
Claim 13 recites "being in each case". It is unclear what are the "cases" referenced and the basis for such a reference.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4, 6, 11, 13, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Pelc et al. US 6,203,759.

Pelc et al. disclose a microvolume liquid handling system.

In one aspect of the invention, the pressure in the dispenser (such as in dispenser 212 (pipette) of FIG. 7) is reduced as the result of reducing the system liquid reservoir (214 in FIG. 7) pressure. The valve (242 in FIG. 7) is closed, and then the nozzle of the dispensing unit can be immersed in the transfer liquid to aspirate a small quantity of the transfer liquid into the dispenser. For example, when gauge pressure in the dispenser reaches minus 30 millibars, submersing the nozzle in the transfer liquid may draw a sufficient amount of liquid to increase the gauge pressure to minus 15 millibars. It should be noted that the dispenser does not aspirate air unless the surface tension in the nozzle is exceeded by the negative gauge pressure. In the preferred

embodiment system using dimethyl sulfoxide, the negative gauge pressure to about 45 millibars does not produce air aspiration into the nozzle. (column 15, lines 13-22).

The above recited aspect of the invention encompasses all the steps and concepts of the instant invention as recited in the above mentioned claims.

As seen in Figure 7, the device may comprise liquid reservoir 214 receives system liquid 20, typically deionized water or dimethyl sulfoxide (DMSO), through an intake tube 216 which contains a cap (not separately shown). The cap on the intake tube 216 is removed to enable the sealed system liquid reservoir 214 to receive system liquid 20 when the cap is off and seals the system liquid reservoir 214 shut when the cap is on so that the system liquid reservoir 214 can be maintained at a desired pressure. Pressure in the system liquid reservoir 214 is maintained by a pressure control system 218, through pressure control tubing 220. The pressure control system 218 includes an electrically controlled pump (pump/pump controller connected to capillary/pipette device 212 are required in claim 6) capable of accurately increasing or decreasing pressure in the system liquid reservoir 214. A pressure sensor 222 mounted on the system liquid reservoir 214 senses pressure in the system liquid reservoir 214 and transmits an electrical signal indicative of that pressure to a system controller 224 through electrical conductor 226. The system controller 224 contains a digital signal processor board and other electronics(not shown) which enable monitoring of various electrical signals, execution of control software code, and control of the microvolume liquid handling system 210. The system controller 224 electrically controls the pressure

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control system 218 through an electrical conductor 228 to adjust the pressure of the system liquid 20, and correspondingly, the pressure of the transfer liquid 24 232.

Further more the plurality of dispensers/pipette devices are arranged in a plate (claims 13) which may be positioned by a robotic system.

***Claim Rejections - 35 USC § 103***

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelc et al.

Pelc et al. does not specify using a gas a first medium and liquid as a second medium.

However it would have been obvious to one of ordinary skill in the art at the time of the invention recognize that a gas such as air may be aspirated at a reduced pressure without taking up a liquid in order to allow the air/gas to permit the drying of a capillary after it has been washed.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelc et al. as applied to claims 1-2, 4, 6, 11, 13, and 14 above, and further in view of Tajima US 5,895,631.



Pelc et al. do not teach the employment of an analysis chip within the capillary device.

Tajima discloses a liquid processing method making use of a pipette device which sucks a liquid containing a target high molecular substance from inside of a vessel through a chip detachably set on a sucking port or a discharging port of a liquid sucking/discharging line and transfers this liquid or target high molecular substance to the next target processing position for the purpose to execute such works as quantifying, separating, taking out, pipetting, clarifying, condensing, and diluting a liquid or a target high molecular substance contained in a liquid.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the modified teachings of Pelc et al. by providing the chip analysis pipetting system of Tajima in the modified device in order to perform simultaneous analysis of each sample which provides for time reduction in processing a large number of samples.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Holmberg; Taher; Freitas, and the website documents disclose the Laplace equation of capillarity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

A handwritten signature in black ink, appearing to be 'BR' or similar, written in a cursive style.

brg